

### **Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the subject application.

### **Listing of Claims:**

What is claimed is:

1. (currently amended) A method of improving the performance of organic conversion coatings, whose primary ingredients are polymeric resins, comprising: ~~the steps of~~

a. forming a first solution consisting essentially of dissolving an organosulfur compound in a first solvent,

b. mixing the first solution in which said organosulfur compound is dissolved with a second solution consisting essentially of solution in which said polymeric resins ~~are~~ dissolved in a second solvent,

c. coating a metallic substrate with the mixture of the solutions containing said organosulfur compound and said polymeric resins,

d. curing the metallic substrate coated with said mixture of the solutions, and  
thereby increasing the corrosion resistance of said metallic substrate without using chrome.

2. (previously presented) The method according to claim 1 wherein said organosulfur compound is selected from the group consisting of alkyl, aryl, and alkyl-aryl thiols, xanthates, sulfides, disulfides, thiocarbamates, dithiocarbamates, thioureas, thiophenols, mercaptopyridines, mercaptoanilines, mercaptoimidazoles, thiophenes, and thiophosphates.

3. (previously presented) The method according to claim 1 wherein said organosulfur compound is an alkanethiol with a general formula  $R(CH_2)_nSH$ , where R is a terminal group selected from the group consisting of H-,  $NH_2$ -,  $HOOC$ -, and  $HO$ -, and n represents the number of hydrocarbons, which can range from 10 to 21.

**AMENDMENT**

Serial Number: 10/786,340

Filing Date: February 25, 2004

Title: Method of Improving the Performance of Organic Coatings for Corrosion Resistance

**Page 3**  
YOU101

4. (original) The method according to claim 1 wherein said organosulfur compound is 1-octadecanethiol.

5. (previously presented) The method according to claim 1 wherein said polymeric resins are selected from the group consisting of acrylic, acrylic-urethane, epoxy, polyester, epoxy-polyester or fluorovinyl polymers, and combinations thereof.

6. (currently amended) The method according to claim 1 wherein said metallic substrate includes a substrate selected from the group consisting of hot rolled and pickled steel sheet, cold-rolled steel sheet, stainless steel sheet, hot-dipped metallic coated steel sheets, electroplated metallic coated steel sheets, aluminum sheets and aluminum alloy sheets, zinc sheets, zinc alloy sheets, copper sheets, copper alloy sheets, gold, and silver.

7. (previously presented) The method according to claim 1 wherein said metallic substrate includes coatings of one or more layers selected from the group consisting of lead, lead alloy, nickel, nickel alloy, zinc, zinc layer, tin, and tin alloy.

8. (currently amended) The method according to claim 1 wherein said first solvent for said organosulfur compound is selected from the group consisting of alcohols, acetone, turpentine, benzene, ethyl and butyl acetate, toluene, petroleum ester, xylene, alkane, mineral spirit, and water.

9. (currently amended) The method according to claim 8 wherein ~~a preferred~~ said first solvent is selected from the group consisting of ethanol, 1-propanol, 1-butanol, and mixtures thereof.

10. (previously presented) The method according to claim 1 wherein the concentration of said organosulfur compound in said polymeric resins is in the range of 0.001–0.5 moles per liter.

**AMENDMENT**

Serial Number: 10/786,340

Filing Date: February 25, 2004

Title: Method of Improving the Performance of Organic Coatings for Corrosion Resistance

**Page 4**  
YOU101

11. (previously presented) The method according to claim 1 wherein said metallic substrate is coated with said mixture of the solutions containing said organosulfur compound and said polymeric resins by means of a roll or a bar coater, cured at a temperature in the range of 100 to 350°C to obtain a desired coating thickness.

12. (currently amended) A method of improving the performance of organic conversion coatings, whose primary ingredients are polymeric resins, comprising: ~~the steps of~~

a. mixing an organosulfur compound with a polymeric resin, wherein said mixture consists essentially of said organosulfur compound and said polymeric resin,

b. coating a metallic substrate with said polymeric resin containing said organosulfur compound,

c. curing the metallic substrate coated with said mixture of the solutions, and  
thereby increasing the corrosion resistance of said metallic substrate without using chrome.

13. (original) A method according to claim 12 wherein said metallic substrate is electrogalvanized steel.

14. (previously presented) A method according to claim 12 wherein said organosulfur compound is selected from the group consisting of alkyl, aryl, and alkyl-aryl thiols, xanthates, sulfides, disulfides, thiocarbamates, dithiocarbamates, thioureas, thiophenols, mercaptopyridines, mercaptoanilines, mercaptoimidazoles, thiophenes, and thiophosphates

15. (previously presented) The method according to claim 12 wherein said polymeric resins are selected from the group consisting of acrylic, acrylic-urethane, epoxy, polyester, epoxy-polyester or fluorovinyl polymers, and combinations thereof.